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ABSTRACT

A survey was conducted of 280 teachers and principals in east-central Ontario (Canada) to investigate what variables best predict educators' attitudes toward local applied research. The four dependent variables were purpose of local research, attitudes toward participation in research, utility of research, and support for research activity. Eight predictor variables included organizational learning characteristics, elementary versus secondary level, personal teacher efficacy, prior participation in research, value of prior research course work, years of teaching experience, formal education, and gender. Results indicated that significant proportions of the variance in the dependent variables were explained by certain personal and organizational characteristics, namely: prior participation in research, sense of personal teacher efficacy, and perceived characteristics of respondent's schools (namely their propensity to learn), which were all positively correlated with the dependent variables, and years of teaching experience, which was negatively correlated. (Contains 76 references.) (JDD)

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INFLUENCES ON TEACHERS' ATTITUDES TOWARD APPLIED EDUCATIONAL RESEARCH

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Influences on Teachers' Attitudes Toward Applied Educational Research

Studies indicate increasing research interest in teachers' involvement in applied research within their local settings. Teacher involvement in the research process is promoted as a strategy to increase research knowledge use by these practitioners. We need to know more about the factors that foster and inhibit teachers' involvement in applied research.

This exploratory survey study of 280 teachers and principals was conducted to investigate what variables best predict educators' attitudes toward local applied research. Eight variables were selected as potential predictors of attitudes toward applied research as measured by four dependent variables: the perceived breadth of purpose; attitudes toward participation; perceived utility of research; and conditions and factors supporting research in schools. Significant proportions of the variance in the dependent variables were explained by certain personal and organizational characteristics, namely: prior participation in research, personal teacher efficacy, years of experience teaching, and perceived characteristics of respondent's schools, namely their propensity to learn.

Results are discussed in terms of our knowledge and understanding of teacher receptiveness to applied research and implications for research and practice.

The current educational reform agenda highlights the professionalization of teaching as a central thrust (Elmore, 1990; Fullan, 1993; Louis & King, 1993; Murphy, 1991; Noffke, 1992). Professionalization implies that teachers assume and practice increased control in areas of noninstructional decision making, engage in closer participation with colleagues in technical core matters than is presently the case, and develop a greater propensity to question curriculum content and methods. Teachers are called upon to play a larger role in grappling with educational purposes and directions (asking "Why are we doing this?"), rather than maintaining a preoccupation with procedural concerns (asking "How do we do this?"). Teachers, in a more professionalized culture, would take greater "responsibility for generating their own expert knowledge" (King & Lonnquist, 1992) thus empowering themselves through their ownership of school-wide and system-wide educational planning. Research evidence is accumulating to show the benefits of participation in decision making, regular professional interactions, and teacher teaming as contributing to higher levels of implementation of educational innovations and curriculum change (Cousins, Ross, & Maynes, 1994; Guskey, 1988; Little, 1982; Raudenbush, Rowan, & Cheong, 1992; Ross, 1992). The movement toward a more decentralized system of educational decision making and responsibility provides the opportunity for both personal and professional teacher growth (Cousins & Earl, 1992; King & Lonnquist, 1992; Noffke, 1992) through the involvement of teachers in school-based decision making which increases their sense of ownership in educational improvement. Organizational structures that transform the traditional clinical role of teachers into the role of scholars (Joyce, Wolf, & Calhoun, 1993; Green & Kvidahl, 1990) contributes to motivation to participate in educational improvement processes and practices (Cousins, 1994; Leithwood & Dart, 1992; Noffke, 1992).

If we accept the enhancement of teachers' professionalism as a viable means toward school improvement, then a natural avenue for development is teacher participation in systematic inquiry and applied research. Teacher participation in carrying out applied research within their local setting or system either in collaboration with researchers (e.g., participatory evaluation, Cousins & Earl, 1992) or promoting and controlling their own

research (e.g., action research, King & Lonnquist, 1992; Noffke, 1992) holds great promise as strategies that would increase teacher utilization of research knowledge and, potentially, contribute to the development of "organizational learning" (Cousins, 1994; Whyte, 1991).

Not unlike research in other domains, studies indicate that research knowledge is under-utilized by teachers and the organizations within which they work (Cousins & Earl, 1992; Poole & Okeafor, 1989). The involvement of teachers in "hands on" research activity is advocated by some on the grounds that it will help to foster the development of the "dense interpersonal networks" required for meaningful sharing, discussion, and reflection (Cousins & Earl, 1992; Galagan, 1993; Louis & Simsek, 1991) and ultimately, the social construction of knowledge (Bandura, 1977, 1986). Such knowledge is likely to be much more usable at the local level by virtue of its meaningfulness to teachers and their ownership of it. Teachers more directly involved in the actual research process may experience a sense of self-determination and ego involvement encouraging them to view the research process as intrinsically rewarding thus, promoting a greater personal investment in its ultimate usage. The relevance of research is likely to increase when teachers are personally engaged in conducting it, and as such, they would be more likely to act on the findings (Cousins & Leithwood, 1993). Recent work in evaluation indicates that increased participation by teachers enhances the potential for organizational assimilation of information (Alkin & Stecher, 1983; Cousins & Earl, 1992). Interaction processes and dense interpersonal networks can act to challenge the cultural perspectives, values, basic assumptions of organization members, and has the potential to create fundamental organizational change (Cousins, 1994; Dyer & Dyer, 1986; Louis, 1994). This social learning philosophy lies behind current business organizational restructuring trends promoting employee involvement and empowerment in leadership roles (Clemmer, 1992; Courtright, Fairhurst, & Rogers, 1989; Cousins, 1994; Manz, Keating, & Donnellon, 1990). Indeed, organizational theorists comment that effective implementation of planned change remains cosmetic and short-lived without employees' direct involvement in group experimentation activity (Galagan, 1993; Garvin, 1993).

Ultimately, the aim is to facilitate greater understanding and acceptance of research findings, and concomitantly, the needed motivation for utilization within the social setting. Engaging the primary users in problem formulation; instrument design and selection; data collection, analysis, interpretation; and the development of recommendations and reports (Cousins & Earl, 1992) facilitates the diffusion of learning through social interpretation that organization members integrate into their interpretive systems and interpersonal networks for sharing and discussion (Bandura, 1986; Cousins, 1994).

While engaging teachers by encouraging them to have a direct hand in local applied research is not new, these activities are not perceived to be central to the traditionally defined role for teachers (King & Lonnquist, 1992). Training in research methods is not usually part of teacher skill development (Green & Kvidahl, 1990; Schafer & Lissitz, 1987). Green and

Kvidahl (1990) found that teachers both with and without a background in research methods course work reported feeling inadequately prepared to understand and conduct research. Teachers use of research was low on average and they rarely conducted or presented research findings. Male educators holding advanced degrees reported higher levels of research training. Such individuals were the minority and likely held administrative positions. McColskey, Altshud and Lawton (1985), found that principals with more extensive training in research reported using research knowledge and having positive opinions about doing so.

While the rationale for teachers' participation in research activity is strong, many potential barriers need to be addressed. These include the hierarchical nature of the organizational structures within which teachers work, increasing levels of teacher workload and cultural norms that value teachers' high, if not exclusive, adherence to traditionally defined technical core activities. Time, effort, and other costs (e.g., time away from class) are emphasized as obstacles to participation by teachers in research (King & Lonnquist, 1992; King, Schleisman & Binko, 1991; Noffke, 1992; Weiss, 1991). Noffke (1992) suggests that teachers may feel their involvement in applied research will contribute to their being viewed as less caring and concerned about students in the classroom. Involvement by teachers in research activities therefore, demands the interest and support of both senior administration (Cousins, 1993; Noffke, 1992) and the community. Noffke (1992) warns that research activity should not be incorporated as an "add-on" assignment demanding that teachers acquire and exercise new skills in addition to performing accustomed activities, thereby creating a double workload. Critics of teacher involvement in research activities (e.g., Weiss, 1991) maintain that, despite the potential payoff, such activity is unrealistic and asks too much, since teachers have different skills, time orientations, reward systems, and ways of dealing with the world. We need to know more about influences on teachers' willingness to participate in research and their attitudes toward applied research if these barriers to participation are to be overcome. Indeed, receptiveness toward research has been established as a strong predictor of evaluation utilization (Cousins & Leithwood, 1986). Enhancing our understanding of the principle influences on such attitudes may provide a basis for formulating strategies to improve them. An important question then becomes, what variables are predictive of teachers' receptiveness to applied local research? This question provides the central focus for the present study. We now turn to the literature in search of clues as to which variables are likely to be predictive of receptiveness. Although, much is known about teachers' disposition toward more traditionally defined roles (Guskey, 1988; Ross, 1992), comparatively little is known about their attitudes toward research (Green & Kvidahl, 1988).

Variables Likely to Predict Attitudes Toward Applied Research

Our review of the literature suggests that both characteristics of the individual teacher and characteristics of the organization in which the teacher works may contribute to his or

her attitudes toward applied research. Eight variables (six personal and two organizational) appear to be influential.

Personal Teaching Efficacy

Teachers' sense of self-efficacy has been remarkably consistent in predicting classroom behaviors and teachers' willingness to implement educational innovation (Ashton & Webb, 1986; Gibson & Dembo, 1984; Poole & Okeafor, 1989; Raudenbush et al., 1992; Ross, 1994). Sense of self-efficacy influences whether a given behavior (instructional or otherwise) will be initiated, the degree of effort expended, and how long the behavior will be maintained in the face of obstacles. Ashton and Webb (1986) translated Bandura's (1977) original theory into an educational model comprised of two efficacy dimensions termed personal teaching efficacy and general teaching efficacy, corresponding to Bandura's clear distinction between the sense of "personal efficacy" and "general efficacy." Personal teaching efficacy was defined as the individual teacher's belief in his/her ability to bring about student learning and general efficacy as his/her belief in the ability of teachers as a group to bring about such learning (Ashton & Webb, 1986; Gibson & Dembo, 1984; Ross, 1994). Teachers working in collaboration with other teachers, interacting with peer coaches, engaging in joint work and sharing instructional decisions report a higher sense of personal teaching efficacy (Ashton & Webb, 1986; Poole & Okeafor, 1989; Raudenbush et al., 1992; Ross, 1994). Findings of other studies indicate that high efficacy teachers are innovative, tend to take risks, are open to learning difficult professional procedures, and persist in implementation tasks (Guskey, 1988; Riggs & Enochs, 1990; Ross, 1994; Smylie, 1988; Tracs & Gibson, 1986; Wax & Dutton, 1991). Although empirical support is presently thin, it seems reasonable to postulate that a high sense of personal self-efficacy would be an important determinant of a teacher's likelihood to become involved in applied social research. Such individuals would be more likely to view research involvement as a promising challenge with the potential to both increase their own knowledge and inform school improvement.

Prior Participation in Research

A second variable that warrants attention as a potential predictor of attitudes toward research is prior participation in research activities. Cousins and Leithwood (1993) found that teachers appreciated and benefitted from their involvement in the design and delivery of interventions, their engagement in implementation and follow-up activities, and their ongoing contact with those able to provide "in-person" assistance. Huberman (1987, 1990) found that when teachers and researchers collaborated on research projects, increased inter-organizational sharing and contacts promoted deeper thinking about the meaning of findings. Greene (1987, 1988a, 1988b) also found that such interactions increased practitioners sense of benefits (political and personal) and, similarly, Alkin and Stecher (1983) noted that teachers became personally interested in research findings when they had been involved in the research process. These studies suggest that teacher involvement in

research increases their personal commitment to and advocacy of the findings and enhances the chances of the findings being used. Prior satisfactory involvement would then work to promote greater enthusiasm in educators to further participate.

Research Course Work Training

It seems probable that educators who have had prior research course work would have a more well developed appreciation for such activity and this would positively influence their attitudes toward local research. For example, McColskey et al. (1985) found that principals' use of research knowledge increased with their level of research training. Green and Kvidahl (1990) found significant correlations among teachers' education, course work in research methods, and attitudes toward research. Teachers with advanced degrees were more likely to report having taken research methods course work. Teachers either with advanced degrees or prior research course work reported greater usage of research and more positive opinions and attitudes about the value and utility of research in education. However, slightly less than half of these teachers reported having any training in research methods and, on average, they also reported low utilization of research findings and a sense of inadequacy in being prepared to carry out research. Nonetheless, prior training appears likely to predict teachers' propensity to participate in research activities.

Experience

The number of years of educators' teaching experience may be important as a predictor of attitudes toward research despite Guskey's (1988) finding that it was not significantly related to perceptual or attitudinal variables in the implementation of instructional innovation. Personal characteristics such as experience have been found to predict evaluation utilization (Cousins & Leithwood, 1986). For example, some studies indicate that educator characteristics such as organizational position (Braskamp, Brown, & Newman, 1978), professional level and professional background (Newman, Brown, & Littman, 1979) affect how evaluative information is interpreted. Teachers and administrators, experienced teachers and student teachers, and business persons and educators differed in the value and utility they placed on the same information. Experience cannot be considered separately from career stage, however. Huberman's (1988) research suggests that stabilization may be an important factor. His data revealed that teachers at this stabilizing stage of their lives had diminished interest in participating in school improvement activities. It seems likely that such teachers would view involvement in research similarly.

Formal Education

Quite apart from research course work training, prior participation in research seems likely that educators who have obtained graduate degrees (master's, doctorate) would have more highly developed skills for consuming research and a deeper appreciation for the

relevance and utility of research to education. Such development would likely positively influence their attitudes toward local research. Green and Kvidahl (1990) found that teachers with advanced degrees reported greater use of research and more positive opinions about research. Educators directing their careers toward administrative positions generally need to acquire graduate degrees to qualify for advancement. Findings by Braskamp et al. (1978) indicate that administrators find evaluation information more useful than teachers suggesting that educators who are pursuing (or have obtained) graduate degrees would also, be more receptive toward research than those not engaged in acquiring additional qualifications.

Gender

Research findings indicate that the sex of the educator affects how evaluative information is interpreted (Newman et al., 1979; Newman, Brown & Rivers, 1983). In another study, Green and Kvidahl (1990) found that males with prior training in research reported greater participation than similar females. Since gender affects perceptions of the value of research information and reported participation it is reasonable to include it as a potential predictor of teachers' attitudes toward research in the present study. However, the literature does not provide enough evidence to support a prediction about the direction of the affect of gender on attitudes toward research.

Organizational characteristics along interact with personal characteristics, are likely to have a significant impact on attitudes toward research (Cousins, 1993; Weiss, 1991). Two such possible influences seem worthwhile to consider: organizational learning characteristics and panel or level of the school (elementary, secondary).

Organizational Learning Characteristics

Cousins and Earl (1992) and Cousins (1994) suggest that organizations that provide opportunities for collaborative work and social processing have "learning" characteristics. Such organizations are not only collaborative but are inquiry focused, prone to professional sharing and discussion of information, support the social interpretation of information, stimulate staff to rethink conceptions, and challenge basic assumptions. In education the cultural norms of schools with organizational learning characteristics actively encourage the effective contribution of teachers to school-wide matters. Staff have a higher level of commitment and are motivated to participate in learning activities and receive the time and resources required to be involved in innovative activities such as research. Leaders within such schools provide vision, foster commitment to group goals, model valued behaviors, provide individual support and intellectual stimulation to teachers, and foster high performance expectations (Cousins, 1994; Leithwood & Dart, 1992). Given this forward moving learning orientation, it seems likely that educators working in such environments would be receptive in their attitudes toward research, since research activity provides

knowledge for reflection, discovery and refinement, and fits naturally within such progressive cultural norms.

Panel

It is of interest to test for differences between elementary and secondary school teachers in their attitudes toward research. Elementary schools have been shown to be more "tightly coupled" than their secondary school counterparts and elementary teachers more collaborative than is the norm in high schools (Firestone & Herriott, 1982; Herriott & Firestone, 1984). From this indirect evidence, it might be postulated that elementary teachers would be more willing to participate with their peers on collaborative projects such as applied research studies.

Method

Sample

Data for the present study were collected under the auspices of a larger ongoing funded research project investigating phenomena associated with participatory evaluation (Cousins, 1993; Cousins & Earl, 1992). Teachers were sampled from two school districts, each district with separate experiences regarding participatory evaluation and applied research.

One organization was a medium-sized (23,000 students) public school district located in east-central Ontario. The second district was a small-sized (approximately 11,000 students) Roman Catholic separate school board in east-central Ontario. The population for this study consisted of all principals and teachers in the small board and those in schools with intermediate or senior programs (i.e., grades 7 to high school graduation) in the medium-sized board. The total sample was 280 which reflected nearly 25% of the population.

Instrument

A questionnaire was developed and tailored slightly for each school district. Among other things, the questionnaire inquired about perceived impact of a designated research study specific to each board and factors influencing impact. Other data collected were teachers': (1) willingness to participate in future research projects and the conditions under which they would be willing to do so; (2) propensity to consume research data and to engage in, for example, systematic inquiry within their own classrooms; (3) prior experience with research including participation and graduate training; (4) personal teacher self-efficacy; (5) attitudes toward applied research in education; and (6) opinions about local (board or school level) research. Although the instrument was developed and pilot tested for the present study significant portions of it were adapted from that used by Green and Kvidahl (1990).

Procedure

Local coordinators were recruited to administer the study within their boards. Questionnaires were sent in bundles to principals who were asked to distribute them to teachers to be completed anonymously. Local coordinators assumed responsibility for collecting the data from the schools and forwarding them to the researchers for scoring and analysis. Participation in the study was optional, though a covering letter assured anonymity acknowledged board consent and promised a summary of the study. A subsequent site visit revealed that limitations on the response rate were likely to be attributable to a variety of factors including principals' decision not to distribute the questionnaires; teachers' perceived lack of relevance of the study to their needs and heavy workloads; and competing surveys occurring simultaneously. Since the principals could (and in many cases likely did) exercise their right to refusal, many teachers would not even have seen the questionnaires.

Data were analyzed using SPSSpc+. Table 1 shows all the variables included in the study and the descriptive statistics for this sample. Four composite variables measured respondents' beliefs and opinions about research and served as a the dependent variables. Each of these variables was based on a four-point Lickert-type rating scale ranging from "strongly disagree" to "strongly agree."

[INSERT TABLE 1 ABOUT HERE]

Purpose of Local Research

The dependent variable labelled "Purpose" (4 items) assessed teachers' and principals' views about the breadth of purposes of local applied research. The items were: assisting educators to find new ways of doing things; showing the public that schools are doing what they should be; helping educators to meet school or board needs accountability demands; and, informing curriculum development and implementation in the board. Cronbach's alpha (.72) showed that the scale variable was sufficiently reliable for the present purposes. Table 1 shows that respondents generally did not view all purposes of local research as being valid.

Attitudes Toward Participation in Research

The dependent variable labelled "Attitudes" (6 items) assessed educators' beliefs and opinions about teachers becoming directly involved in local research activities. For example, respondents were asked about the extent to which they agreed with the following statements: research conducted by teachers should be taken seriously; research by teachers would be taken seriously; teachers would be more likely to use research ideas they heard from other teachers. The reliability of the Attitudes scale was acceptable (alpha=.70). The mean response for this scale showed that respondents were generally favourable about teachers' involvement in conducting local research.

Utility of Research

The dependent variable labelled "Utility" averaged the agreement ratings of seven questionnaire items that assessed teachers' and principals' beliefs and opinions about educational research and its relevance, helpfulness, usefulness, and importance to them professionally. Examples are: research findings on teaching have been helpful to me in my teaching; and, professional journals are useful sources of practical information. The reliability of this scale also reached an acceptable level (alpha=.75) for the present purposes. Table 1 shows that the respondents' views about the utility of applied educational research results were fairly neutral on average.

Support for Research Activity

Seven questionnaire items were averaged to construct the dependent variable labelled "Support." The scale reflected teachers' and principals' views about a variety of structures and conditions that may aid or limit local research process. For example, respondents were asked to circle their response to: I have adequate background or training in research; undergraduate programs in education should provide training in reading research; and, I have time to conduct research. The reliability of the Support scale was found to be adequate (alpha=.71). Table 1 shows that respondents were relatively neutral on average in their ratings concerning supports for research.

Eight predictor variables were used in this study. Two of these pertained to the organization, while the remaining described the individual respondents.

Organizational Variables

(1) Organizational Learning Characteristics

The predictor variable labelled "Organizational Learning" consisted of the average of nine questionnaire items and assessed teachers' and principals' beliefs and opinions about their school and teaching context as related to: collegial sharing of ideas and frequency of communication; willingness to ask for and receive help from each other; the extent to which staff are involved in school-wide decision making; the extent to which staff are in agreement about school functioning; staff willingness to try something new; and teacher questioning of beliefs about education. Items for this scale were adapted from the instrument used by Leithwood, Cousins and Gérin-Lajoie (1993). The reliability of the scale variable was high (alpha=.82). Table 1 shows that, on average, respondents in this sample were modestly disposed to a view of their school as having organizational learning characteristics.

(2) Panel

The predictor variable labelled "Panel" indicated that 60% of the respondents were teaching in the secondary panel (grade 9 to graduation) and the remainder being located in the elementary panel (grade K to 8).

Personal Variables

(3) Personal Teacher Efficacy

"Personal Teacher Efficacy" was a predictor variable of strong interest in the present study. This scale consisted of items originally developed for the Rand studies of school change (Armour et al., 1976). The three items were: If I try really hard I can get through to even the most difficult and unmotivated students; when the grades of my students improve it is usually because I found more effective teaching approaches; and, when a student does better than usual, many times it is because I exerted a little extra effort. Although the first of these has been described as crude (Guskey & Passaro, 1993), it predicts scores on lengthier instruments and continues to be used extensively in teacher efficacy research (Gibson & Dembo, 1984; Ross, 1994). This scale assessed teachers' and principals' beliefs about their own sense of personal teaching. Table 1 shows that respondents' propensity to have perceived themselves as efficacious was only modest.

(4) Prior Participation

The predictor variable labelled "Prior Participation" was constructed by averaging responses to 11 items, all rated on a five-point frequency scale ranging from "never" to "always." This scale variable represented teachers' and principals' intensity of prior involvement in research activity in the past three years. Items ranged from prior involvement in research such as reading, reviewing, and discussing literature to trying out and systematically recording results in the classroom/school, to working on research projects, to writing research reports, presenting research locally or at professional meetings, and publishing research in professional journals. For example, respondents were asked to rate how often they: worked with other teachers or principals on local school or board research projects; discussed research literature with colleagues; and, worked with college or university colleagues on research projects. The reliability of the prior participation scale was impressive (alpha=.89). Table 1 reveals that respondents were not generally very active in research activity.

(5) Value of Prior Research Course Work

The predictor variable labelled "Value of Education Course Work" was constructed from two questionnaire items concerning prior enrollment in research courses and the value

attached to such course work. Sixty-four percent of respondents indicated they had not taken prior research course work, 18% indicated they took prior research course work and did not value it, and 17% indicated taking and valuing prior course work.

(6) Years of Teaching Experience

The predictor variable labelled "Experience" revealed how long in years respondents had been in the field of education. Table 1 shows that respondents averaged about 17 years of teaching experience, but that considerable variation was apparent.

(7) Formal Education

Respondents indicated their level of post-secondary education (Bachelor's Degree--acquired or in progress; Additional Qualification courses; Master's Degree/Doctorate Degree) as reflected in the variable labelled "Formal Education." Table 1 shows that the majority of respondents (87%) held a Bachelor's Degree with some additional qualifications and 13% held graduate degrees (Master's and/or Doctorate).

(8) Gender

The final predictor variable shown in Table 1 reveals that 57% of respondents were female.

Results

Table 2 shows that the zero order correlations among the four dependent variables were relatively high and in the expected positive direction ($p < .001$). The Table also shows the correlations between the eight predictor variables and the four dependent variables were variably statistically significant, but much lower on average. Two predictors, Gender and Panel, were found not to correlate with the dependent variables. Organizational Learning, Experience, and Formal Education each correlated with only two of the four dependent variables, but always in the direction expected. Correlations were strongest between all four dependent variables and Personal Teacher Efficacy and Prior Participation ($p < .001$) in every case.

[INSERT TABLE 2 ABOUT HERE]

The predictor variable Experience was negatively correlated with each of the four attitudes toward participation variables indicating that educators who are older and have taught longer are less likely to value "hands on" teacher involvement in local research activity. Experience was also significantly negatively correlated with support indicating that

older and more experienced teachers were less likely to have background training in research activity or feel that they have the ability or time to conduct local research.

The predictor variable Organizational Learning Characteristics was positively and significantly correlated with the perceived breadth of purpose and attitudes toward participation each at ($p < .001$). Respondents who indicated their school context to be one of sharing, helping, and supportive of teacher decision making positively viewed research as a means to find new ways of doing things and believed that results would be taken seriously by colleagues. They also, believed that teachers and specialists should collaborate on research projects.

Formal Education was significantly and positively correlated with the two dependent variables labelled Utility and Support each at ($p < .01$). Teachers who possessed higher levels of formal education tended to agree that research findings have been helpful to them in their teaching, that they have the ability, time and training to utilize research findings, and that research training should be provided for teachers at the undergraduate level. Table 2 shows that the intercorrelations among the eight predictor variables were moderately low if statistically significant. This finding suggests that multicolinearity among the predictor variables does not pose a problem in the present analysis.

Table 3 displays the results of four separate stepwise regression analyses corresponding to each of the four dependent variables. In each analysis, all eight organizational and personal independent variables were included as potential predictors. Across the four models, the number of predictors entered in the final version ranged from two to four. In every model, Prior Participation and Personal Teaching Efficacy surfaced as statistically significant predictors of attitudes toward applied research.

[INSERT TABLE 3 ABOUT HERE]

Table 3 shows the three predictor variables which best model views about the purposes of local research. These were Prior Participation, Organizational Learning, and Personal Teacher Efficacy. They combined to account for 23% of the variance ($R^2 = .23$, $F(3,207) = 20.22$, $p < .001$). Teachers who reported greater prior participation in research, who viewed their schools as having organizational learning characteristics, and who had more confidence in their own ability to bring about student learning were more likely to acknowledge greater breadth of purpose for local applied research.

Four predictor variables accounting for 36% of the variance in prediction were found to best model the attitudes toward participation in local research ($R^2 = .36$, $F(4,209) = 29.15$, $p < .001$). These were Prior Participation in Research, Organizational Learning, Experience, and Personal Teacher Efficacy. Teachers with fewer years of teaching experience, showed a greater inclination to view their school as having learning characteristics, a greater sense of

personal teaching efficacy, and with prior experience participating in research, tended to believe that teachers and principals should actively be involved in local applied research.

Prior Participation and Personal Teacher Efficacy, accounting for 35% of the variance in prediction, best modelled the utility of local research ($R^2=.35$, $F(2,211)=56.17$, $p<.001$). Prior participation in research and a high sense of efficacy were characteristics of teachers who described research results as relevant, helpful, a source of practical information, and useful in stimulating their reflection on teaching practice.

Three predictor variables best modelled support for local research and accounted for 42% of the variance in prediction. These were self-reported participation, valuing prior research course work, and personal teacher efficacy ($R^2=42$, $F(3,210)=50.05$, $p<.001$). Teachers who had received training in research methods, had experienced prior participation in research activity, and described themselves as highly efficacious reported confidence in their ability to understand and evaluate research findings. They believed they had the time to conduct research and that similar training should be provided at the undergraduate level.

Discussion

The rationale for the present study was to focus on one aspect of a larger conceptual framework developed by Cousins and Leithwood (1993) in an investigation of teacher characteristics (user personal characteristics receptiveness to research) that ultimately influence knowledge utilization by educators. Teachers' participation in applied research activity is tied to their heightened understanding of research knowledge and influences their usage of it (Cousins & Earl, 1992; Cousins & Leithwood, 1993). This study contributes to our understanding of the influential "personal factor" that makes evaluation work bear upon decision making (Patton, et al., 1975). After considering potential personal characteristics possibly contributing to educators' attitudes toward local applied research, those holding the most promise were divided into two categories: personal and organizational.

Several important findings resulted from this study. First, the predictor variables of prior participation in research and sense of personal teaching efficacy both consistently explained variance across all four composite variables measuring attitudes toward research. Second, perceived organizational learning accounted for the variance on two of the composite dependent variables: breadth of purpose and attitudes toward educators' participation in research. Third, valued prior research course work entered to account for variance in teachers' opinions about possessing the training requirements to understand and conduct research. Finally, more experienced educators had less positive attitudes toward teacher participation in research.

Findings concerning the influence of prior participation and sense of personal efficacy on attitudes toward research are consistent with suggestions from the literature. Other

studies indicate that teachers who have been involved in school and system-based research activity describe the experience as professionally valuable both as a source of renewal and benefit in improving their understanding of the use and purpose for research knowledge in educational change (Cousins, 1993; Cousins & Brydges, 1993; Noffke, 1992; King & Lonnquist, 1992; King et al., 1991). The present data extend this knowledge.

Several interesting things may be said about the relationship of personal teaching efficacy to attitudes toward research. First, high efficacy teachers have been found to be unusually effective teachers and most receptive to implementing new practices and embracing challenging and difficult teaching techniques (Guskey, 1988; Riggs & Enochs, 1990; Ross, 1994; Smylie, 1988). It may be that efficacious teachers are more inclined to engage in research activities because such activities are perceived as being innovative, academically-oriented, collaborative and change-oriented (Berman, McLaughlin, Bass, Pauly & Zellman, 1977; Guskey, 1988; Ross, 1994). Second, Ross (1993) points out that it is unknown whether higher personal efficacy precedes innovative practices or results from it. He suggests that there may be a reciprocal interaction in that collaborative involvement increases efficacy and efficacy increases this type of involvement and that this effect is generative, fostering high efficacy teachers to attempt greater challenges. Therefore, it seems plausible that high efficacy teachers would be attracted to participate in research activity and that such involvement would increase their propensity to participate and positive attitudes toward research.

Finally, Guskey (1988) comments that high efficacy teachers tend to volunteer for new programs and low efficacy teachers avoid participation. Anxiety is related to sense of self-efficacy and arises from low self-esteem in possessing the skills, information or behavioral requirements in new situations (Arnold & Razak, 1991; Bandura, 1977; Leibowitz, Kay, & Farren, 1986). Teachers low in sense of personal self-efficacy likely experience inhibited motivation to participate in research, and their anxiety may increase a personal sense of threat, when considering such involvement. This may explain why low efficacy teachers tended to report not having prior research experience in this study. On average, teacher training does not provide course work in research methods (Green & Kvidahl, 1990; Schafer & Lissitz, 1987), so many teachers have not had the opportunity to be exposed to research activity that would aid in overcoming their apprehensions. Interestingly, as Ross (1993) comments, collaboration with other teachers can have the effect of stimulating less efficacious teachers.

Of interest, are the findings that educators' years of teaching experience resulted in their having negative opinions and beliefs toward the breadth of purpose and attitudes toward participation in research activity. Huberman's (1988) study offers a potential explanation for this finding. Some more experienced teachers reach a career stage where they disinvest in school work and increase other outside interests. They wish to avoid additional teaching tasks or off-hours commitments promoting involvement in school-wide innovations (i.e.,

participation in research). This occurs after the "stabilization" or middle stages of a teacher's career. Leithwood (1990) comments that the school culture and its organizational structures may be partly responsible for stifling teacher development as they psychologically enter this career stage. After they gain experience, teachers often become isolated, entrenched in routine and regularity and such organizational cultural norms are highly resistant to change. Staff development efforts are needed to promote opposite norms that encourages reflection on practices (outside the classroom), collegiality and experimentation. Desired norms characterize schools as learning environments (Leithwood, 1990) and social learning theory proposes that interactive processes influence educators at both the individual and organizational level (Cousins & Earl, 1992; Cousins & Leithwood, 1993). Older teachers may have accustomed themselves to accept the traditional norms of expected disengagement because this conventional pattern of behavior prevails in their own and the organization's belief system. Therefore, older teachers with "less energy, activism, involvement, idealism, and more scepticism and pessimism" (Huberman, 1988, p.129) have personally and socially learned to hold less positive opinions about breaking from the mould and venturing into participation in local research. Older teachers may have developed scepticism and disillusionment from having witnessed past evaluation exercises go unused (Alkin, Daillak, & White, 1979; Huberman, 1988) fostering a "why bother" sentiment which encourages them to shun participation in current attempts to change local practices.

Perceived learning characteristics of teachers' organizations emerged as an important predictor of educators' beliefs and opinions about the breadth of purpose of research and teachers' attitudes toward research. Poole, Okeafor, and Sloan (1989) found that collaboration stimulated teachers' involvement in change implementation. It can be presumed that if the organization is predisposed to collaborative activity such as is required for research involvement then member teachers would be too. Again, traditional organizational norms do not incorporate research into teachers' role definition (Murphy, 1991). However, a forward moving collaborative teaching organization probably tends to favour norms that encourage positive attitudes toward finding new ways of doing things, promoting the image of progressive and innovative education, and viewing research activity as a means to this end (purpose). Positive attitudes toward "hands on" participation would be consistent with enthusiasm for this breadth of purpose. These organizational climates have been termed to be "transformational" (Leithwood, 1992) and emphasize accomplishment, increase teachers' certainty about the worth of their practice, involve teachers in school decision making, are responsive to teacher concerns, encourage innovation, provide supportive and useful supervision, and promote teacher professionalism (Coladarci & Breton, 1991; Lee, Buck, & Midgley, 1992; McLaughlin & Marsh, 1978; Moore & Esselman, 1992; Newmann, Rutter, & Smith, 1989; Raudenbush et al., 1992; Rosenholtz, 1989; Ross, 1992). Knowledge acquired from research activity would be very important to professionals responsible for local and school-wide decision making. The influence of perceived organizational learning on attitudes toward research in this study are noteworthy. The question that arises is what weight does this variable carry in affecting teachers' research participation and efficacy

characteristics? To what extent do organizational characteristics of a school or system act to prevent teachers from pursuing research involvement? The literature is replete with studies indicating the powerful role organizational characteristics exert on the evaluation process and the use of evaluation data (Alkin et al., 1979; Cousins, 1993; Cousins & Leithwood, 1986; Patton et al., 1975; Weiss, 1972). Future studies assessing the potency of such factors in influencing teachers' willingness to engage in local research are required.

Valued prior research course work impacted on educators' opinions toward research and their confidence in having the ability, time, training, and understanding to conduct research. Green and Kvidahl (1990) found a similar relationship. The present study reveals that although relatively few teachers had taken prior research course work, when they had, more favourable attitudes toward research were apparent. These data suggest that increased attention to strategies designed to enhance teachers' knowledge and skill in research is likely to be productive.

Of significance is that in this study, both organizational variables and personal variables combined to impact on attitudes toward research. The personal variables of personal teaching efficacy, prior participation, prior research course work and experience surfaced as important predictors of attitudes. However, organizational learning characteristics was a key contributor to educators seeing the breadth of purpose for research and the importance of teacher involvement in research.

Since both personal and organizational characteristics impact on research activity and thus, are ultimately likely to have an impact on utilization, future research needs to investigate the relationship between these two categories of variables to better understand how they interact.

In addition, further clarification is needed about the relationship between personal sense of teaching efficacy and prior participation in local research and attitudes toward research. Teacher efficacy can be changed through organizational action aimed at reform and implementation of innovation (Stein & Wang, 1988), especially in the earlier teaching years (Brousseau, Book, & Byers, 1988; Hoy & Wollfolk, 1993; Ross, 1994). Therefore, if teacher efficacy coincides with proclivity to participate and it can be strengthened a better understanding of the contributing role of this personal characteristic may provide clues about how to increase educators' involvement in research. Direct involvement of this sort holds much promise for enhancing the utilization and implementation of research findings by educators.

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Table 1
Descriptive Statistics

		Scale	Mean	SD	N
DEPENDENT VARIABLES:					
1.	Purpose	1-4	2.7	.56	267
2.	Attitudes	1-4	3.3	.44	269
3.	Utility	1-4	2.8	.45	269
4.	Support	1-4	2.5	.47	270
PREDICTOR VARIABLES:					
ORGANIZATIONAL VARIABLES:					
5.	Organizational Learning	1-4	3.0	.45	268
6.	Panel	1,2[1]	1.60	.49	249
PERSONAL VARIABLES:					
7.	Personal Teacher Efficacy	1-4	2.71	.59	254
8.	Prior Participation	1-5	2.19	.39	267
9.	Value of Education Course Work	1,2,3[2]	1.54	.79	261
10.	Experience	1-35[3]	16.67	8.73	254
11.	Formal Education	1,2,3[4]	1.67	.69	280
12.	Gender	1,2[5]	1.43	.50	259

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1 1=Elementary/2=Secondary
2 1= No Course Work/2=Prior Course Work Not Valued/3=Prior Course Work Valued
3 Number of Years Teaching Experience
4 1= Bachelor Degree/2=A.Q./3=Master's Degree or Doctorate Degree
5 1=Female/2=Male

Table 2
Correlations (and Significance Levels) Among Variables (N=280)

	1	2	3	4	5	6	7	8	9	10	11	12
DEPENDENT VARIABLES:												
1. Purpose	(-)											
2. Attitudes	.50***	(-)										
3. Utility	.57***	.48***	(-)									
4. Support	.40***	.38***	.66***	(-)								
PREDICTOR VARIABLES:												
ORGANIZATIONAL VARIABLES:												
5. OrganizationalLearning	.22***	.30***	.09	.07	(-)							
6. Panel	-.03	-.04	-.01	.00	-.26***	(-)						
PERSONAL VARIABLES:												
7. Personal TeacherEfficacy	.28***	.32***	.29***	.29***	.26***	-.23***	(-)					
8. Prior Participation	.38***	.37***	.51***	.52***	.12*	.11*	.24***	(-)				
9. Research Course Value	.17**	.12*	.29***	.47***	.03	.12*	.10	.41***	(-)			
10. Experience	-.02	-.26***	-.05	-.13*	.05	-.05	-.01	.02	.00	(-)		
11. Formal Education	-.01	.04	.19**	.19**	-.06	.06	.08	.12*	.23***	-.12*	(-)	
12. Gender	-.08	-.10	-.05	.05	-.06	.30***	-.16*	.04	.14*	.27***	-.06	(-)

*p< 05;**p<.01;***p<.001; Alpha Reliabilities Reported in the text.

Table 3

Regression of Attitude Toward Applied Research on Personal and Organizational Variables

	Purpose			Participation			Utility			Support		
	Step	Standardized Beta	T	Step	Standardized Beta	T	Step	Standardized Beta	T	Step	Standardized Beta	T
Organizational Learning	2	.20	3.18***	2	.27	4.72***	^	^	^	^	^	^
Prior Participation	1	.31	4.91**	1	.31	5.41***	1	.50	8.78***	1	.39	6.41***
Experience	^	^	^	3	-.24	-4.35***	^	^	^	^	^	^
Personal Teaching Efficacy	3	.17	2.62**	4	.210	3.58***	2	.21	3.59***	3	.20	3.67***
Research Course Value	^	^	^	^	^	^	^	^	^	2	.29	4.91***

*p<.05, **p<.01; ***p<.001; ^ = not included in the stepwise model;
Note: Panel, Gender and Formal Education not included in any of the stepwise models.